

Att'y Dkt. No.: US-109

U.S. App. No: 10/784,986

IN THE CLAIMS:*Kindly rewrite Claims 1-9 as follows, in accordance with 37 C.F.R. § 1.121:*1.(currently amended) ~~A~~-An isolated protein selected from the group consisting of:(A) a protein which has the amino acid sequence of SEQ ID NO: 4; and(B) a protein which has the amino acid sequence of SEQ ID NO: 4 including substitution, deletion, insertion or addition of one to 20 ~~or several~~ amino acid residues and has lysine decarboxylase activity.2.(currently amended) ~~A~~-An isolated protein selected from the group consisting of:(A) a protein which has the amino acid sequence of SEQ ID NO: 4; and(B) a protein which has the amino acid sequence of SEQ ID NO:4 including substitution, deletion, insertion or addition of one to 10 ~~or several~~ amino acid residues; ~~whereby said protein~~ and has lysine decarboxylase activity ~~and is at least 90% homologous to SEQ ID NO: 4.~~3.(currently amended) ~~A~~-An isolated DNA encoding a protein selected from the group consisting of:(A) a protein which has the amino acid sequence of SEQ ID NO: 4; and(B) a protein which has the amino acid sequence of SEQ ID NO: 4 including substitution, deletion, insertion or addition of one to 20 ~~or several~~ amino acid residues and has lysine decarboxylase activity.4.(currently amended) ~~A~~-An isolated DNA encoding a protein selected from the group consisting of:(A) a protein which has the amino acid sequence of SEQ ID NO: 4; and(B) a protein which has the amino acid sequence of SEQ ID NO: 4 including substitution, deletion, insertion or addition of one to 10 ~~or several~~ amino acid residues; ~~whereby said protein~~ and has lysine decarboxylase activity ~~and is at least 90% homologous to SEQ ID NO: 4.~~

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5.(currently amended) The DNA of claim 3, selected from the group consisting of:

(a) a DNA which has the nucleotide sequence of the nucleotide numbers 684 to 2930 in SEQ ID NO: 3; and

(b) a DNA which is hybridizable with a DNA having the nucleotide sequence of the nucleotide numbers 684 to 2930 in SEQ ID NO: 3 under stringent conditions comprising 1x SSC, 0.1%SDS, at 60°C, and wherein said DNA~~which~~ encodes a protein having lysine decarboxylase activity.

6.(currently amended) The DNA of claim 3, which is ~~derived~~isolated from a ~~chromosome~~the genome of a *Methylophilus* bacterium.

7.(cancelled)

8.(currently amended) A *Methylophilus* bacterium which produces L-lysine, wherein a ~~gene on a chromosome~~ polynucleotide on the genome is disrupted, wherein said polynucleotide is selected from the group consisting of having a nucleotide sequence identical to the DNA of claim 3 is disrupted, or and a gene on a chromosome nucleotide sequence having homology to the DNA of claim 3 to such a degree that homologous recombination with the DNA occurs ~~is disrupted, and~~ thereby expression of said ~~gene~~ polynucleotide is suppressed and the intracellular lysine decarboxylase activity is reduced or eliminated.

9.(currently amended) A method for producing L-lysine, comprising the steps of culturing the *Methylophilus* bacterium of claim ~~7 or~~ 8 in a medium containing methanol as a major carbon source resulting in accumulation of L-lysine in culture, and collecting the L-lysine from the culture.

10.(new) The DNA of claim 4, selected from the group consisting of:

(a) a DNA which has the nucleotide sequence of the nucleotide numbers 684 to 2930 in SEQ ID NO: 3; and

(b) a DNA which is hybridizable with a DNA having the nucleotide sequence of

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the nucleotide numbers 684 to 2930 in SEQ ID NO: 3 under stringent conditions comprising 1x SSC, 0.1%SDS, at 60°C, and wherein said DNA encodes a protein having lysine decarboxylase activity.

11.(new) The DNA of claim 4, which is isolated from the genome of a *Methylophilus* bacterium.

12.(new) A *Methylophilus* bacterium which produces L-lysine, wherein a polynucleotide on the genome is disrupted, wherein said polynucleotide is selected from the group consisting of a nucleotide sequence identical to the DNA of claim 4, and a nucleotide sequence having homology to the DNA of claim 4 to such a degree that homologous recombination with the DNA occurs, and thereby expression of said polynucleotide is suppressed and the intracellular lysine decarboxylase activity is reduced or eliminated.

13.(new) A method for producing L-lysine, comprising the steps of culturing the *Methylophilus* bacterium of claim 12 in a medium containing methanol as a major carbon source resulting in accumulation of L-lysine in culture, and collecting the L-lysine from the culture.

1. (Previously Presented) An isolated protein selected from the group consisting of:
 - (A) a protein which has the amino acid sequence of SEQ ID NO: 4; and
 - (B) a protein which has the amino acid sequence of SEQ ID NO: 4 including substitution, deletion, insertion or addition of one to 20 amino acid residues and has lysine decarboxylase activity.
2. (Previously Presented) An isolated protein selected from the group consisting of:
 - (A) a protein which has the amino acid sequence of SEQ ID NO: 4; and
 - (B) a protein which has the amino acid sequence of SEQ ID NO: 4 including substitution, deletion, insertion or addition of one to 10 amino acid residues and has lysine decarboxylase activity.
3. (Previously Presented) An isolated DNA encoding a protein selected from the group consisting of:
 - (A) a protein which has the amino acid sequence of SEQ ID NO: 4; and
 - (B) a protein which has the amino acid sequence of SEQ ID NO: 4 including substitution, deletion, insertion or addition of one to 20 amino acid residues and has lysine decarboxylase activity.
4. (Previously Presented) An isolated DNA encoding a protein selected from the group consisting of:
 - (A) a protein which has the amino acid sequence of SEQ ID NO: 4; and
 - (B) a protein which has the amino acid sequence of SEQ ID NO: 4 including substitution, deletion, insertion or addition of one to 10 amino acid residues and has lysine decarboxylase activity.
5. (Cancelled)
6. (Previously Presented) The DNA of claim 3, which is isolated from the genome of a *Methylophilus* bacterium.

7. (Cancelled)

8. (Currently Amended) A *Methylophilus* bacterium which produces L-lysine, wherein a polynucleotide on the genome is disrupted, wherein said polynucleotide is ~~selected from the group consisting of a nucleotide sequence identical to the DNA of claim 3, and a nucleotide sequence having homology to the DNA of claim 3 to such a degree that homologous recombination with the DNA occurs, and thereby expression of said polynucleotide is suppressed~~ and the intracellular lysine decarboxylase activity is reduced or eliminated.

9. (Previously Presented) A method for producing L-lysine, comprising the steps of culturing the *Methylophilus* bacterium of claim 8 in a medium containing methanol as a major carbon source resulting in accumulation of L-lysine in culture, and collecting the L-lysine from the culture.

10. (Cancelled).

11. (Previously Presented) The DNA of claim 4, which is isolated from the genome of a *Methylophilus* bacterium.

12. (Currently Amended) A *Methylophilus* bacterium which produces L-lysine, wherein a polynucleotide on the genome is disrupted, wherein said polynucleotide is ~~selected from the group consisting of a nucleotide sequence identical to the DNA of claim 4, and a nucleotide sequence having homology to the DNA of claim 4 to such a degree that homologous recombination with the DNA occurs, and thereby expression of said polynucleotide is suppressed~~ and the intracellular lysine decarboxylase activity is reduced or eliminated.

13. (Previously Presented) A method for producing L-lysine, comprising the steps of culturing the *Methylophilus* bacterium of claim 12 in a medium containing methanol as a major carbon source resulting in accumulation of L-lysine in culture, and collecting the

L-lysine from the culture.